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AN ENUMERATION OF LICHENS COLLECTED BY CLARA EATON CUMMINGS IN JAMAICA—I

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The lichens forming the basis of the following enumeration were collected by the late Professor Clara Eaton Cummings, of Wellesley College, on a trip to the island of Jamaica in the West Indies during February and March, 1905. After Professor Cummings' death, the collection was sent according to her instructions to the New York Botanical Garden. It is through the courtesy of Dr. and Mrs. N. L. Britton that I have been permitted to study the material.

The present paper contains the lichens of the groups Coniocarpineae, Cyclocarpineae, and Hymenolichenes. The Graphidineae are now being studied by Professor Bruce Fink, and these together with the Pyrenocarpeae will be treated in a subsequent paper.

It is unfortunate that the exact data relating to the locality and habitat of the specimens collected were lost after Professor Cummings' death, and it is, therefore, possible to give only the numbers attached to the specimens. Material of several of the numbers has been issued during the last two years in Mr. G. K. Merrill's Lichenes Exsiccati. All such will be referred to in connection with the respective species.

The study of the lichen flora of tropical America is attended with considerable difficulty, owing chiefly to two facts: first, in the case of many of the species there are no authentic specimens in American herbaria; and, second, the literature, while considerable in amount, is widely scattered and for the most part not correlated. In addition to Tuckerman's Synopsis of the North American Lichens, the most useful single work is Wainio's Étude sur les lichens du Bresil (in Acta Soc. Fauna et Flora Fennica. 1890). This is cited in the following enumeration as Wainio

1890. All other citations are given with sufficient completeness to be self-explanatory.

I am indebted to the courtesy of Professor W. G. Farlow for permission to consult the collections in the Cryptogamic Herbarium of Harvard University. Three collections therein contained have been of special help: Wright's Lichenes Cubae, determined by Tuckerman; Lindig's New Granada (Colombia) collections, determined by Nylander; and Wainio's Lichenes Brasiliensis Exsiccati.

I have followed the classification and nomenclature of Dr. Zahlbruckner's treatment of the lichens in Engler and Prantl's Die Naturlichen Pflanzenfamilien, Teil 1, Abteilung 1*; except that I have maintained *Biatora* as a genus distinct from *Lecidea,* and *Bilimbia* as distinct from *Bacidia,* and I have retained *Anaptychia* as a section of the genus *Physcia.*

CONIOCARPINEAE

SPHAEROPHORUS COMPRESSUS Ach. Meth. 135. 1803. Cummings no. 167.

CYCLOCARPINEAE

1. PILOCARPON TRICHOLOMA (Mont.) Wainio (1890) **2**: 89. *Biatora* Mont. Ann. Sci. Nat. III. **16**: 53. 1851. *Lecidea leucoblephara* Nyl. Ann. Sci. Nat. IV. **19**: 337. 1863 is considered by Tuckerman to be the same, and the description offers no sufficient characters to distinguish the two. Cummings nos. 175 and 187.

2. OCELLULARIA ACTINOTUM (Tuck.) Muell. Arg. Flora **70**: 397. 1887. *Thelotrema* Tuck. Proc. Am. Acad. Arts and Sci. **5**: 411. 1862. Cummings no. 107.

3. **?Ocellularia anamorphum** (Nyl.) comb. nov. *Thelotrema* Nyl. Ann. Sci. Nat. IV. **19**: 329. 1863. Cummings no. 131 appears to belong here, but there has been no material available for comparison, and the descriptions are incomplete.

4. OCELLULARIA AUBERIANOIDES (Nyl.) Muell. Arg. Nuov. Giorn. Bot. Ital. **23**: 395. 1891. Cummings nos. 98 and 102.

5. OCELLULARIA CLANDESTINA (Ach.) Muell. Arg. Graph. Féean. in Mem. Soc. phys. et d'hist. nat. de Genève, vol. 29, no. 8, p. 7. 1887. Cummings nos. 94 and 96.

6. OCELLULARIA TEREBRATA (Ach.) Muell. Arg. loc. cit. Cummings no. 104.

7. THELOTREMA CONCRETUM Fée, Essai Suppl. 90. 1837. Cummings no. 100.

8. DIPLOSCHISTES SCRUPOSUS (L.) Norm. Con. Praem. Gen. in Nyt Magazin for Naturvidensk. **7**: 232. 1853. *Urceolaria* Ach. Cummings no. 139.

9. MICROPHIALE LUTEA (Dicks.) Steiner, Sitzungsber. kais. Akad. Wiss. Wien **106**: 227. 1897. *Gyalecta* Tuck. Cummings no. 139.

10. GYALECTA GLOEOCAPSA (Nitschke) Zahlbr. in Engler & Prantl: Nat. Pflanzenfam. Teil 1, Abt. 1*, p. 126. 1905. *Bryophagus Gloeocapsa* Nitschke in Rabenhorst's Lich. Europ. no. 608. 1861. Cummings no. 85. This agrees exactly with some of the original material, and is of interest in being, so far as I am aware, the only record of the species outside of central Europe.

11. COENOGONIUM LEPRIEURII (Mont.) Nyl. Ann. Sci. Nat. IV. **16**: 89. 1861. Cummings no. 170.

12. **Biatora aurigera** (Fée) comb. nov. *Lecidea* Fée Essai Crypt. 106. 1824. Cummings no. 132. The specimens agree with the descriptions, but there has been no material available for comparison.

13. BIATORA COARCTATA (Smith) Tuck. Syn. N. A. L. **2**: 15. 1888. Cummings no. 115.

14. **Biatora amorphocarpa** sp. nov.

Thallus white, farinose, made up of more or less heaped and conglomerate granules, effused and indeterminate. Apothecia 0.3–0.7 mm. in diameter, at first plane, disk dark ferruginous-brown, with a thick paler brown margin, then becoming tuberculose-proliferate and difform, and somewhat paler. Exciple ferruginous, epithecium olivaceous, granulate, thick (10 μ); paraphyses sparingly branched above, with clavate tips; hymenium pale, 50 μ

high, becoming blue with iodine; hypothecium pale, KOH. Spores 8, fusiform, with rounded ends, more or less guttulate (rarely faintly uniseptate), hyaline, 13–15 × 3 μ.

Type collected on bark, Jamaica, B. W. I. Clara E. Cummings nos. 135 and 140, in the herbarium of Wellesley College.

15. **Biatora endocaerulea** sp. nov.

Thallus scanty, of scattered and irregularly heaped, discrete, minute, crystalloid granules. Apothecia minute, under 0.5 mm. in diameter, elevated, always emarginate, at first regularly subglobular, then proliferous and forming irregular gibbous masses, reaching about 1 mm. in diameter. In section the entire apothecium, including hymenium and hypothecium is a beautiful deep indigo blue, turning clear green with KOH. Spores 8, hyaline, simple, or rarely faintly uniseptate, narrow-oblong, 8–10 × 3.5 μ.

Type collected on bark, Jamaica, B. W. I. Clara E. Cummings no. 161, in the herbarium of Wellesley College.

16. **Biatora lanuginosa** sp. nov.

Thallus white, byssine, thick and felt-like, made up of loose, irregularly branching hyphae, 4–7 μ in diameter, with minutely roughened walls, surrounding green, Pleurococcus-like gonidia. Apothecia 0.5–1.5 mm. in diameter, disk dark brown, at first concave with a thick, minutely pubescent, pale margin, which shows a pinkish tinge, then becoming plane and strongly flexuous, and the margin thin. Epithecium and hymenium hyaline; exciple of radiating hyphae pale ferruginous; body of apothecium pseudoparenchymatous, darker ferruginous; hypothecium deep ferruginous-brown to brownish-black. Spores 8, hyaline, simple, oblong, 8–12 × 3.5–4 μ. Hymenium greenish-blue with iodine.

Type collected on the ground over matted roots, Jamaica, B. W. I. Clara E. Cummings no. 121, in the herbarium of Wellesley College.

17. BIATORA ONCODES Tuck. Syn. N. A. L. **2**: 157. 1888. *Lecidea* Tuck. Proc. Am. Acad. Arts and Sci. **6**: 274. 1864. Cummings no. 119.

18. **Catillaria leptocheila** (Tuck.) comb. nov. *Lecidea* Tuck. in Proc. Am. Acad. Arts and Sci. **6**: 280. 1864. *Heterothecium* Tuck. Syn. N. A. L. **2**: 55. 1888. Cummings no. 149.

19. **Catillaria rosea** sp. nov.

Thallus thin to medium, creamy-fuscescent, verruculoseuneven. Apothecia 0.8–1.5 mm. in diameter, scattered, somewhat elevated, convex to globular, in part irregular to subdifform, always emarginate. In section the entire apothecium below the hymenium is brownish-black, becoming a beautiful rose-red with KOH; epithecium fuliginous; hymenium pale, becoming greenish-blue with iodine. Spores 8, hyaline, narrow-ellipsoid, somewhat larger at one end, bilocular, 10–13 × 4–5 μ.

Type collected on bark, Jamaica, B. W. I. Clara E. Cummings no. 127, in the herbarium of Wellesley College.

20. **Megalospora Cummingsiae** sp. nov.

Thallus sulphur-color, thick and irregular, coarsely verrucose-granulose to finely mealy. Apothecia ample, 2–3 mm. in diameter, dark rufous-brown, with a thick, entire, concolorous and persistent margin. Epithecium and exciple deep brown; hymenium white, opaque, 250 μ high, without reaction with iodine; hypothecium thin, white, subtended by a brownish-black layer. Spores solitary or 2, thick-walled, curved, 72–110 × 20–26 μ. Distinct from *M. sulphurata* Mey. & Flot. in the partly mealy thallus, the large spores, and the absence of reaction of the hymenium with iodine.

Type collected on bark, Jamaica, B. W. I. Clara E. Cummings no. 129, in the herbarium of Wellesley College. I take pleasure in naming this new species after its discoverer, in recognition of her services to North American lichenology.

21. **Megalospora jamaicensis** sp. nov.

Thallus stramineous, thin, continuous, smooth and shining. Apothecia 1–1.5 mm. in diameter, elevated, disk pale brown, with a thick, stramineous margin, which is entire when young, becoming crenate with age. Exciple pale yellow, epithecium and hypothecium hyaline. Spores solitary (or 2), hyaline, bilocular, thick-walled, straight or slightly curved, 72 × 20 μ. Distinct from *M. sulphurata* Mey. & Flot. in the color of the apothecia and the straighter spores.

Type collected on bark, Jamaica, B. W. I. Clara E. Cummings nos. 138 and 142, in the herbarium of Wellesley College.

22. MEGALOSPORA VERSICOLOR (Fée) Zahlbr. in Engler & Prantl Nat. Pflanzenfam. Teil 1, Abt. 1*, p. 134. 1905. *Lecidea* Fée. *Heterothecium* Flot. Cummings nos. 151 and 153.

23. **Bilimbia artytoides** (Nyl.) comb. nov. *Lecidea* Nyl. Ann. Sci. Nat. IV. **19**: 342. 1863. *Biatora triseptata* var. *artytoides* Tuck. Genera Lich. 162 (note). 1872. Cummings no. 166.

24. BILIMBIA HYPNOPHILA (Ach.) Th. Fr. Lich. Arctoi 183. 1860. Cummings no. 166*a*.

25. **Bilimbia pallidissima** sp. nov.

Thallus dirty white, thin, of more or less discrete, flattened, minute granules. Apothecia minute, 0.2–0.5 mm. in diameter, closely appressed and flattened, emarginate from the beginning, soon irregular and confluent, very pallid. In section the apothecium is entirely hyaline in all parts. Spores 8, hyaline, 4-locular, fusiform, blunt, broader at one end, 17–20 × 4–5 μ.

Type collected on bark, Jamaica, B. W. I. Clara E. Cummings no. 134, in herbarium of Wellesley College. Stock of *B. sphaeroides* (Dicks.) Th. Fr., from which it differs in the thallus and in the shape of the apothecia.

26. **Bilimbia radicicola** sp. nov.

Thallus pale creamy-brown, thick, encrusting the substratum, finely but densely granular. Apothecia 0.6–1 mm. in diameter, dark ferruginous-brown, at first somewhat concave, with a thick, flexuous paler margin, then becoming plane to convex and the margin less prominent, although always persistent. Exciple and epithecium pale; hymenium tinged with brown; hypothecium brownish-black. Spores 8, hyaline, 4-locular, oblong-ovoid to broad fusiform, larger at one end, 22–30 × 8–10 μ.

Type found growing over matted roots, Jamaica, B. W. I. Clara E. Cummings no. 162, in the herbarium of Wellesley College. Apparently related to *B. molybditis* (Tuck.).

27. **Bilimbia thysanota** (Tuck.) comb. nov. *Lecidea* Tuck. Proc. Am. Acad. Arts and Sci. **6**: 277. 1864. *Biatora* Tuck. Syn. N. A. L. **2**: 158. 1888. Cummings no. 150.

28. **Bilimbia terrestris** sp. nov.

Thallus dirty white, of heaped and conglomerate granules, which average 0.2 mm. in diameter, the heaps scattered and not forming a continuous thallus. Apothecia 0.8–1 mm. in diameter, subimmersed, solitary or aggregated, convex to globular, emarginate, ferruginous-brown to almost black. Epithecium pale greenish; hypothecium pale; paraphyses filiform, sparingly branched above, hymenium hyaline, becoming blue with iodine. Spores 8, hyaline, 4-locular, fusiform-oblong with rounded ends, 17–22 × 6–9 μ.

Type collected on earth, Jamaica, B. W. I. Clara E. Cummings no. 164, in herbarium of Wellesley College. In habit, this species resembles *B. artytoides* (Nyl.), but it is distinct in the discrete granules of the thallus, in the convex and emarginate apothecia, and in the pale hypothecium.

29. BACIDIA ENDOLEUCA (Nyl.) Kicks. Fl. Crypt. Fland. **1**: 261. 1867. *Biatora atrogrisea* (Delise) Hepp. Cummings no. 148.

30. BACIDIA RUBELLA (Hoffm.) Mass. Ric. sull. auton. Lich. 118. 1852. *Biatora* Rabenh. Cummings no. 124.

31. **Bacidia subgranulosa** (Tuck.) comb. nov. *Lecidea microphyllina* var. *subgranulosa* Tuck. Proc. Am. Acad. Arts and Sci. **6**: 278. 1864. *Biatora subgranulosa* Tuck. Syn. N. A. L. **2**: 40. 1888. Cummings no. 118.

32. **Toninia janeirense** (Muell. Arg.) comb. nov. *Thalloidima* Muell. Arg. Hedwigia **31**: 280. 1892. Cummings no. 48. The specimens agree exactly with the description, but there has been no material available for comparison.

33. BOMBYLIOSPORA TUBERCULOSA (Fée) Mass. Ricerch. sull. auton. Lich. 116. 1852. *Heterothecium* Flot. Cummings no. 145.

34. **Lopadium amaurum** (Wainio) comb. nov. *Lecidea* Wainio in Journ. of Bot. **34**: 103. 1896. Cummings no. 152.

35. LOPADIUM LEUCOXANTHUM (Spreng.) Zahlbr. Sitzungsber. kais. Akad. Wiss. Wien **111**: 398. 1902. *Heterothecium* Mass. Cummings no. 146.

36. PHYLLOPSORA FURFURACEA (Pers.) Zahlbr. in Engler & Prantl Nat. Pflanzenfam. Teil 1, Abt. 1*, p. 138. 1905. *Lecidea* Pers. and many authors. *Biatora* Tuck. Cummings nos. 49 and 137.

37. PHYLLOPSORA PARVIFOLIA (Pers.) Muell. Arg. Bull. Herb. Boiss. vol. 2, append. 1, p. 90. 1894. *Biatora* Tuck. Cummings no. 44.

38. BAEOMYCES ABSOLUTUS Tuck. Amer. Journ. Sci. **28**: 201. 1859. Cummings no. 176.

39. BAEOMYCES ERYTHRELLUS (Mont.) Nyl. Syn. **1**: 181. 1858. Cummings nos. 177 and 178. No. 114 is sterile and has the stipes fastigiately branched, but it clearly belongs here also.

(*Note.*—As the full bibliographical citations for the species of *Cladonia* are given in Wainio's well-known "Monographia Cladoniarum Universalis," it has seemed unnecessary to give them here.)

40. CLADONIA AGGREGATA (Sw.) Ach. No. 73.

41. CLADONIA ALPESTRIS (L.) Rabenh. No. 83.

42. CLADONIA ANGUSTATA Nyl. No. 70. Issued in Merrill's Lich, Exsic. no. 63, as *C. Floerkeana f. intermedia* Hepp, but a comparison of the material with an authentic specimen of *C. angustata* in the Tuckerman herbarium shows it to be that species.

43. CLADONIA CERATOPHYLLA (Sw.) Spreng. No. 69.

44. CLADONIA DACTYLOTA Tuck. No. 71.

45. CLADONIA DEGENERANS (Flke.) Spreng. No. 79. This is a reduced form, but agrees well with some of the smaller specimens in the Tuckerman herbarium.

46. CLADONIA DIDYMA var. MUSCIGENA (Eschw.) Wainio. No. 72.

47. CLADONIA FIMBRIATA var. SIMPLEX (Weis.) Flot. No. 75.

48. CLADONIA FIMBRIATA var. SUBULATA (L.) Wainio. No. 74.

49. CLADONIA PITYREA (Flke.) Fr. Nos. 77 and 78. No. 76 also appears to belong here, although it is less typical.

50. CLADONIA RANGIFORMIS Hoffm. No. 81.

51. CLADONIA SYLVATICA (L.) Hoffm. No. 82.

52. STEREOCAULON CORNUTUM Muell. Arg. Flora 69: 252. 1886. Cummings no. 11. Issued in Merrill's Lich. Exsic. no. 121 as *S. pityrizans* Nyl. Whether or not these two names are synonyms is a point that can be settled only by a study of the type specimens.

53. STEREOCAULON RAMULOSUM (Sw.) Ach. Meth. 314. 1803. Cummings nos. 9, 10, and 12 may all be placed here provisionally, awaiting the completion of a monographic revision of the genus now in progress.

54. DICHODIUM BYRSINUM (Ach.) Nyl. Lich. Nov. Zeland. 9. 1888. *Physma byrsaeum* (Afzel.) Tuck. Syn. N. A. L. **1**: 115. 1882. Cummings no. 45.

55. LEPTOGIUM BULLATUM (Ach.) Nyl. Syn. **1**: 129. 1858. Cummings no. 56.

56. LEPTOGIUM CHLOROMELUM (Sw.) Nyl. Syn. **1**: 128. 1858. Cummings no. 67. This is scarcely typical, but agrees with some of the material so named in the Tuckerman herbarium.

57. LEPTOGIUM MARGINELLUM (Sw.) Mont. apud Ramon de la Sagra: Hist. physique Cuba **1**: 115. 1838–1842. Cummings no. 68. Issued in Merrill's Lich. Exsic. no. 86.

58. LEPTOGIUM LACERUM (Sw.) S. F. Gray, Nat. Arr. Brit. Pl. **1**: 401. 1821. Cummings no. 60. This is sterile but agrees with material in the Tuckerman herbarium.

59. LEPTOGIUM PHYLLOCARPUM (Pers.) Nyl. Syn. **1**: 130. 1858. Cummings no. 59.

60. LEPTOGIUM PUNCTULATUM Nyl. Lich. Mexican. 1. 1872. Cummings no. 64. This has been compared with the material so named in Wainio's Lich. Brasil. Exsic. no. 380, from which it differs only in the thallus being more lacerate. But the spores are considerably larger than the measurements given by Wainio, being $33 \times 10\,\mu$ instead of a maximum of $28 \times 5\,\mu$, and the material may prove to be distinct.

61. LEPTOGIUM SATURNINUM (Dicks.) Nyl. Actes Soc. Linn. Bordeaux **21**: 272. 1856. *Leptogium myochroum* var. *tomentosum* (Hoffm.) Schaer. Cummings nos. 57 and 58.

62. LEPTOGIUM TREMELLOIDES (L. f.) S. F. Gray, Nat. Arr. Brit. Pl. **1**: 400. 1821. Cummings nos. 63 and 66; also 65 (?).

63. LEPTOGIUM TREMELLOIDES f. IMPRESSO-PUNCTATUM Tuck. in Wright's Lich. Cubae no. 17. Cummings no. 61. Issued in Merrill's Lich. Exsic. no. 131 as *L. foveolatum* Nyl. a species much more definitely lacunose than the present form, which is minutely and sparsely pitted.

64. PARMELIELLA TRYPTOPHYLLA (Ach.) Muell. Arg. Mem. Soc. phys. et d'hist. nat. de Genève **16**: 376. 1862. *Pannaria* Mass. Cummings no. 50.

65. PANNARIA LEUCOSTICTA Tuck. Proc. Am. Acad. Arts and Sci. **4**: 404. 1860. Cummings no. 47*a*.

66. PANNARIA RUBIGINOSA (Thunb.) Delise. Dict. Class. **13**: 20. 1828. Cummings no. 46. No. 47 also appears to belong here but is less typical.

67. **Erioderma microcarpa** sp. nov.

Thallus irregularly and more or less imbricately laciniate-lobate; upper surface fuliginous-brown, coarsely short-pilose, minutely but conspicuously roughened between the fibrils; under side sulphury to intensely yellow, conspicuously veined, and with white rhizoids. Upper cortex well-developed and pseudoparenchymatous. Apothecia very small for the genus, 0.8 mm. or less in diameter, pallid reddish-brown, borne on the surface of the thallus and somewhat elevated, margin concolorous, thick and subpersistent, glabrous. Exciple well-developed, of vertical, parallel, thick-walled hyphae, pallid, without gonidia, epithecium obscure, granular; hymenium hyaline, with iodine blue, slowly turning brown; hypothecium pallid. Spores 8, simple, hyaline, ovoid, the epispore thickened and minutely roughened, 12–16 × 7–8 μ.

Type collected in Jamaica, B. W. I. Clara E. Cummings no. 189, in herbarium of Wellesley College.

68. ERIODERMA WRIGHTII Tuck. Am. Journ. Sci. **25**: 423. 1858. Cummings no. 25.

69. ERIODERMA sp. Cummings no. 42 evidently belongs to this genus and to a different species from either of those given above, but it is sterile and too immature for certain determination.

70. COCCOCARPIA PELLITA (Ach.) Muell. Arg. Flora **65**: 320. 1882. *Pannaria molybdea* (Pers.) Tuck. Gen. Lich. 52. 1872. Cummings no. 143; also no. 160, which approaches var. *cronia* (Tuck.) Muell. Issued in Merrill's Lich. Exsic. no. 114.

(*Note.*—The tropical species of *Lobaria* and *Sticta* are much in need of monographic revision. In the absence of such a treatment I can do no more than give the results of a careful comparison of the specimens with the material in the Tuckerman herbarium.)

71. LOBARIA CORROSA (Ach.) Wainio (1890) **1**: 200. *Sticta dissecta* var. *corrosa* (Ach.) Tuck. Syn. N. A. L. **1**: 93. 1882. Cummings no. 21. Issued in Merrill's Lich. Exsic. no. 42.

72. **Lobaria pallida** (Hook.) comb. nov. *Sticta* Hook. in Kunth: Syn. plant. quas in itin. ad plag. aequinoct. orb. novi colleg. Humboldt & Bonpland **1**: 29. 1822. Cummings no. 23.

73. LOBARIA PELTIGERA (Delise) Wainio (1890) **1**: 199. *Sticta dissecta* Ach. and many authors. The material bearing this name in the Tuckerman herbarium varies very greatly, and it seems scarcely possible that it can all be one species.

(*a*) Cummings no. 24 is the smooth, polished form with very regular and beautiful sinuate lobing. It agrees best with the specimen in Wainio's Lich. Brasil. Exsic. no. 378. It also agrees with the type specimens of *Sticta Fendleri* Mont. & Tuck., which Tuckerman seems to have considered to be a synonym.

(*b*) Cummings no. 20 is an even, dull form with short rather irregular lobes. It agrees with material from Jamaica collected by J. Hart.

(*c*) Cummings no. 18 is the minutely pitted form with narrower, somewhat irregular lobes, which agrees with many of the specimens in the Tuckerman herbarium. From the descriptions, one would consider this to be the *Ricasolia subdissecta* of Nylander (Ann. Sci. Nat. IV. **11**: 214. 1859), but material under the latter name in the Tuckerman herbarium does not agree. It is to be noted, also, that Delise in the original description of *Sticta peltigera* (Histoire du genre Sticta, 150. 1822) says "supra lacunoso." Material corresponding to no. 18 was issued in Merrill's Lich. Exsic. no. 41.

74. LOBARIA EROSA (Eschw.) Forssell, Bihang till k. Svenska Vet. Akad. Handlingar **8**: 24. 1883. *Sticta erosa* Tuck. Syn. N. A. L. **1**: 93. 1882. *Lobaria quercizans* Wainio (1890) **1**: 195, not Michx. Fl. Bor. Am. **2**: 324. 1803. Concerning the correct name to be used for this species, compare Hue in Nouv. Arch. Mus. d'Hist. Nat. Paris, IV. **3**: 34. 1901. Cummings nos. 19 and 22.

75. STICTA AURATA (Sm.) Ach. Meth. 277. 1803. Cummings nos. 26 and 27. Issued in Merrill's Lich. Exsic. no. 44.

76. STICTA CROCATA (L.) Ach. Meth. 277. 1803. Cummings no. 26*a* is paler than usual and approaches *S. Mougeotiana* Delise, an authentic specimen of which is in the Tuckerman herbarium.

77. STICTA CROCATA var. LEUCOSTICTA (Pers.) Nyl. Ann. Sci. Nat. IV. **11**: 238. 1859. Cummings no. 31.

78. STICTA DAMAECORNIS (Sw.) Ach. Meth. 276. 1803.

(*a*) No. 37 is the typical form.

(*b*) No. 30 is a more narrowed, and distinctly dichotomous form, agreeing well with *f. elongato-laciniata* Tuck. in Wright Lich. Cubae no. 60.

(*c*) No. 28 differs from no. 30 only in being narrower still (2 mm. wide or less) and the margins incurved so as to make the lobes subtubular.

79. STICTA DAMAECORNIS var. SINUOSA (Pers.) Nyl. Syn. **1**: 356. 1858. Cummings no. 36.

80. STICTA TOMENTOSA (Sw.) Ach. Meth. 279. 1803. Cummings no. 29 has cilia longer than usual and margins with occasional lobules, which are, however, not at all isidioid, as in *S. Weigelii* (Ach.) Wainio. No. 33 also comes here but has glabrous margins.

81. STICTA WEIGELII (Ach.) Wainio (1890) **1**: 189. *Sticta quercizans* Delise Hist. Sticta 84. 1822, and many authors. Cummings nos. 32, 34 and 35.

82. PELTIGERA CANINA (L.) Hoffm. Deutsch. Fl. **2**: 106. 1795. Cummings no. 51 is the typical form. No. 52 has been issued in Merrill's Lich. Exsic. no. 49 as "var. laciniata Merrill var. nov." This appears to be worthy of varietal rank and as the above is a *nomen nudum* a brief diagnosis is here appended: Thallus deeply cleft into relatively few, narrow lobes (1 cm. wide or less), with the margins more or less crenate and crisped; upper surface conspicuously tomentose; under side pale at the margin, becoming dark toward the center, with a few scattered, coarse rhizoids.

83. PELTIGERA POLYDACTYLA (Neck.) Hoffm. loc. cit. Cummings nos 53 and 54.

84. PERTUSARIA CRYPTOCARPA Nyl. Ann. Sci. Nat. IV. **11**: 221. 1859. Cummings no. 106 agrees with Nylander's description, except that the spores are somewhat larger ($96–125 \times 30–36 \mu$ instead of $80–95 \times 28–30 \mu$).

85. PERTUSARIA LEIOPLACELLA Nyl. Bull. Soc. Linn. Normandie II. **2**: 71. 1868. Cummings no. 123.

86. PERTUSARIA TUBERCULIFERA Nyl. Ann. Sci. Nat. IV. **19**: 323. 1863. Cummings no. 103.

87. PERTUSARIA VELATA (Turn.) Nyl. Not. Sallsk. Faun. Flor. Fenn. **5**: 179. 1861. Cummings no. 101.

88. LECANORA PALLIDA (Schreb.) Schaer. Enum. Lich. Eu. 78. 1850. Cummings no. 120.

89. LECANORA SUBFUSCA (L.) Ach. Lich. Univ. 393. 1810. Cummings no. 113*a*.

90. LECANORA VARIA (Hoffm.) Ach. Lich. Univ. 377. 1810. Cummings nos. 113 and 130.

91. HAEMATOMMA PUNICEUM (Ach.) Wainio (1890) **1**: 72. *Lecanora* Ach. Syn. 174. 1814. Cummings no. 141.

92. PARMELIA CETRATA var. CILIOSA Viaud-Grand-Marais, Notes Parm. Phys. de l'Ouest 156. 1892. Cummings no. 38. Margins both sorediate and ciliate.

93. PARMELIA CETRATA var. SUBSIDIOSA Muell. Arg. Engler Jahrb. **20**: 256. 1894. Cummings no. 39. Margins isidiose and ciliate.

94. PARMELIA LAEVIGATA (Sm.) Ach. Syn. 212. 1814. Cummings nos. 17, 40 and 41.

95. PARMELIA PERFORATA (Wulf.) Ach. Meth. 217. 1803. Cummings no. 43 appears to belong here, but is scarcely typical, the rhizoids being almost wholly absent, and the margins with soredia as well as cilia.

96. PHYSCIDIA WRIGHTII Tuck. Proc. Am. Acad. Arts and Sci. **5**: 401. 1862. Cummings no. 125. This has been compared with the type specimens in Wright's Lich. Cubae no. 92 and agrees exactly. It is to be noted that Dr. Zahlbruckner in Engler & Prantl: Nat. Pflanzenfam. (loc. cit.) erroneously states that the spores of this genus are simple.

97. RAMALINA DENTICULATA (Eschw.) Nyl. Bull. Soc. Linn. Normandie II. **4**: 126. 1870. Cummings no. 179.

98. RAMALINA LINEARIS (Sw.) Ach. Lich. Univ. 598. 1810. Cummings nos. 180 and 181.

99. RAMALINA USNEOIDES (Ach.) Fr. Lich. Eu. 468. 1831. Cummings no. 188.

100. USNEA ANGULATA Ach. Syn. 307. 1814. Cummings no. 4 is a peculiar sorediate form; no. 5 is typical.

101. USNEA CERATINA Ach. Lich. Univ. 619. 1810. Cummings nos. 2 and 6.

102. USNEA DASYPOGA (Ach.) Nyl. apud Hue in Nouv. Arch. Mus. d'Hist. Nat. Paris III. **2**: 270. 1890. Cummings nos. 7 and 8.

103. USNEA FLORIDA (L.) Web. in Wigg. Prim. Fl. Holsat. 91. 1780. Cummings no. 3.

104. USNEA LAEVIS (Eschw.) Nyl. Syn. **1**: 271. 1858. Cummings no. 1. A part of the material is minutely white spotted, but it is not at all papillate. (*Usnea plicata* Ach. was issued in Merrill's Lich. Exsic. no. 109, but the species was not represented in the two sets which formed the basis of this enumeration.)

105. TELOSCHISTES FLAVICANS (Sw.) Norm. Con. Praem. Gen. in Nyt Magazin for Naturvidensk. **7**: 229. 1853. Cummings nos. 167 and 169. Issued in Merrill's Lich. Exsic. no. 59.

106. **Buellia stipitata** sp. nov.

Thallus entirely endophloeodal. Apothecia elevated and substipitate, 0.8–1.6 mm. in diameter, brownish-black, at first concave, with a prominent, thick, concolorous margin, then becoming plane, the margin less prominent but persistent, and the apothecia more or less flexuous. Epithecium fuliginous; hymenium hyaline, with iodine, blue, quickly becoming vinous-red; hypothecium brownish-black, subtended by a thick, fuliginous, pseudoparenchymatous region. Spores 8, brown, broad fusiform, bilocular, rarely each cell biguttulate, 14–17 × 5–7 μ.

Type collected on bark, Jamaica, B. W. I. Clara E. Cummings no. 122, in herbarium of Wellesley College.

107. BUELLIA SUBDISCIFORMIS (Leight.) Wainio (1890) **1**: 167. Cummings no. 147.

108. RINODINA CONRADI Koerb. Syst. Lich. Germ. 123. 1855. Cummings nos. 116 and 165.

109. RINODINA EXIGUA (Ach.) Th. Fr. Lich. Scand. 201. 1871. *R. sophodes* var. *exigua* Tuck. Syn. N. A. L. **1**: 208. 1882. Cummings no. 126.

110. PYXINE PICTA (Sw.) Tuck. Syn. N. A. L. **1**: 79. 1882. Cummings no. 112.

111. PHYSCIA COMOSA (Eschw.) Nyl. Syn. **1**: 416. 1858. Cummings nos. 13 and 14.

112. PHYSCIA HYPOLEUCA (Ach.) Tuck. Syn. N. A. L. **1**: 68. 1882. Cummings no. 16. This is typical, except that the ends of some of the lobes are sorediate.

113. PHYSCIA LEUCOMELA (L.) Michx. Fl. Bor. Am. **2**: 326. 1803. Cummings no. 15. Issued in Merrill's Lich. Exsic. no. 22.

HYMENOLICHENES

CORA PAVONIA (Web.) Fr. Syst. Orb. Veg. 300. 1825. Cummings no. 168.

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